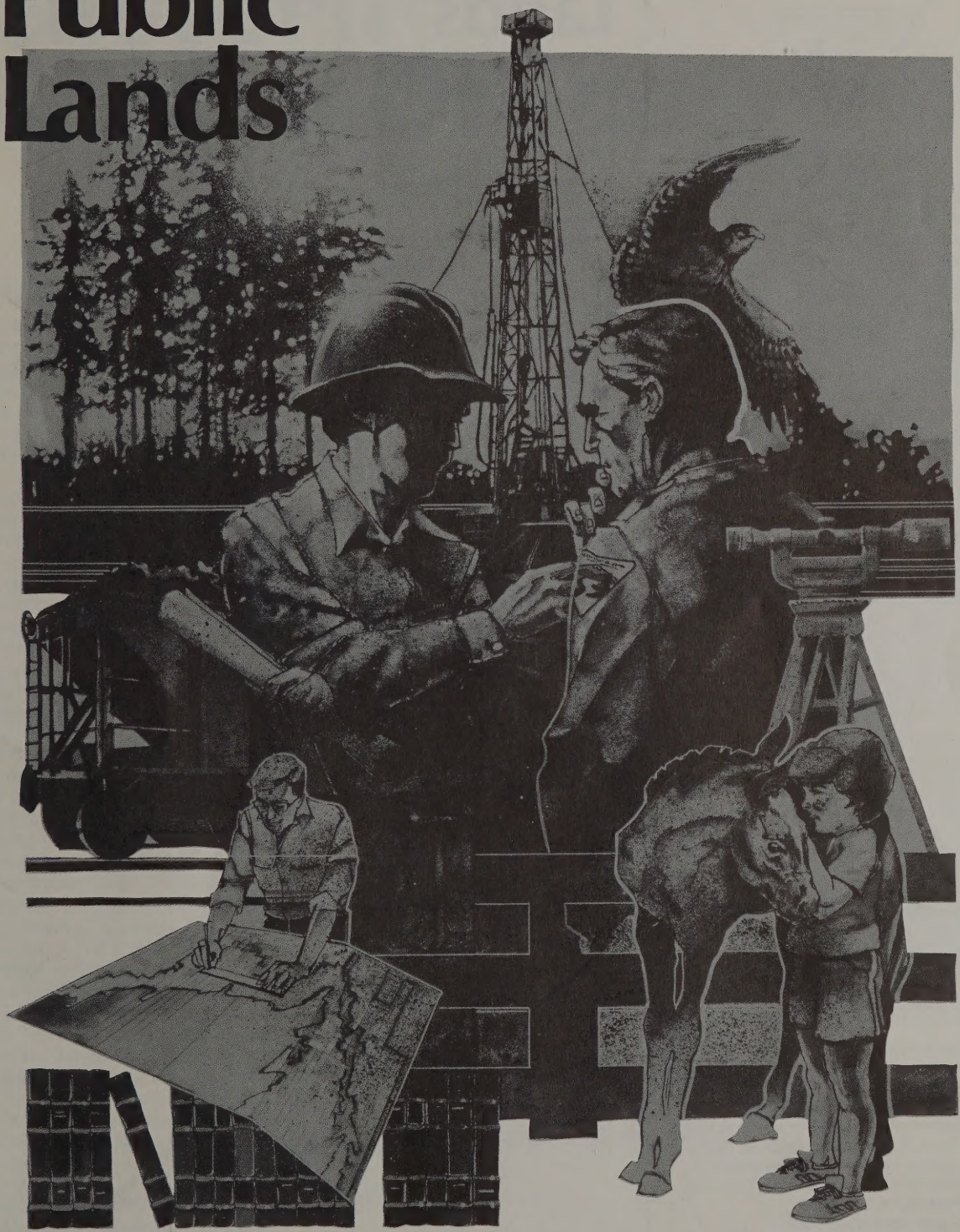


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# Your Public Lands

Winter 1982



BLM's Eastern States Office



**U.S. DEPARTMENT OF THE  
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BUREAU OF LAND MANAGEMENT**

U.S. Department of the Interior. As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

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# Your Public Lands

Winter 1982  
Volume 32  
Number 1

## Contents

- 3**      **BLM's Eastern States Office**  
A substantial task east of the Mississippi  
  
Stephen Altman
- 6**      **An Answer for the Adopt-A-Horse Program in the East**  
  
Judith Lent
- 8**      **News Highlights**
- 9**      **Satellite Monitors Trespass of Federal Minerals**  
  
Ray Arndt
- 13**     **Federal Mineral Ownership in the East—A "Split Estate"**  
  
Roger L. Hildebeidel
- 15**     **Keeper of the Lighthouses**  
A new role for the BLM  
  
Richard A. Brooks
- 18**     **The Biggest Land Title Office in the World!**  
  
William J. "Doc" Dorasavage and Paul Herndon

# The Eastern States Office

When the United States of America was young, its citizens' soaring expectations were based, in part, on the view to the West—first to the lands just beyond the Appalachian Mountains, later to the great plains west of the Mississippi River, and finally beyond the Rocky Mountains.

There lay the future: hundreds of thousands of square miles—no one knew just how many—of unsurveyed and largely unexplored lands. Land for cities, for farms. Land for homes.

At first, most of it was U.S. Government property. It was the “public domain”. But soon enough, the Government began selling or granting these lands through the General Land Office, to veterans, railroad companies, State governments, or other recipients. The first of the public domain lands to be opened to settlement were those in the old Northwest Territory—now the States of Ohio, Indiana, Illinois, Michigan and Wisconsin. Soon afterwards “public domain” lands in territories, which later became the States of Alabama, Mississippi, Louisiana and Florida, were sold. Finally, settlement moved across the Mississippi River into territories which are now the States of Arkansas, Missouri, Iowa and Minnesota. These 13 public domain States and eighteen other States east of the Mississippi River are included in the present-day jurisdiction of BLM's Eastern States Office.

In these States, public lands amounting to 2.8 million acres were withdrawn from sale or conveyance because the Congress had some



**Stephen Altman**

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*BLM-administered island in a Wisconsin river. ESO administers 2,323 islands in the lake States of Minnesota, Michigan, and Wisconsin.*



special purpose in mind: national forests, military reservations, Army Corps of Engineers projects and Coast Guard light stations.

There remain about 56,000 acres for which no special purpose was found, as well as almost 2,800 islands scattered in numerous rivers and lakes and along the coast, and an undetermined quantity of land that was omitted from the original surveys. All of these are now the responsibility of the Eastern States Office.

Compared with BLM responsibi-

*The public room at ESO, where researchers pore over leasing and title records.*



lities in the West, the amount of surface to be managed by the Eastern States Offices isn't much; yet the task is substantial. Nearly ignored for decades, the surface under BLM jurisdiction in the East is scattered over eleven States. It comes in parcels ranging from thousands of acres to just a few tenths of an acre, varying in character from the peat bogs of northern

Minnesota to the beaches of the Florida coast.

That's just the beginning. The Bureau, of course, doesn't just manage land, but most Federally-owned minerals as well—regardless of who owns or manages the overlying surface, and regardless of whether the minerals were part of the original public domain, or were acquired later through purchase or exchange.

All this has a special significance for the Eastern States Office. It means that responsibility for surface resources is dwarfed by its responsibilities for minerals resources. It means responsibilities for approximately 25 million acres of Federal mineral rights, under surface owned or managed by others, versus some 56,000 acres owned by the Federal Government.

The heart of the mission at Eastern States is to manage a large and valuable Federal minerals estate, in a productive and environmentally sound manner, and to do this in areas where the potential for energy and minerals development has only just begun to be recognized. The office is actively engaged in leasing Federal coal resources, and heavily involved in the leasing of oil and gas. The Eastern States Office received over 4,600 new oil and gas offers in FY 1981.

The January 1981 Ft. Chaffee oil and gas lease sale was the highest gross bonus bid onshore competitive oil and gas lease sale in the

history of BLM. That sale was testimony to the potential value of the Federally-owned minerals to be found in Eastern States' area of jurisdiction. These are resources on which the Bureau has just begun to focus active and intensive resource management.

At Eastern States' headquarters in Alexandria, Virginia, and at field offices in Tuscaloosa, Alabama and Duluth, Minnesota, about 180 staff members pursue the many interconnected duties that resource management entails. Long-term efforts are underway to inventory surface and mineral resources under ESO jurisdiction. Maps are planned or in production—under the Federal Minerals Management Mapping Program—to portray the presence and nature of our ownership. Planning areas have been delineated, and each one thoroughly studied—the different resource values identified and weighed, the possible impacts of management decisions evaluated and balanced against one another. State-wide lands and minerals planning has been completed or is underway in Alabama, Florida, Michigan, Wisconsin and Minnesota.

In Minnesota, where the majority of its surface acreage is located, the Eastern States Office has begun to tackle the mandate from BLM headquarters to find opportunities to dispose of its far-flung surface holdings. The staff believes the best course to take is either offer certain

tracts for public sale or to find other, more appropriate managers for many of these scattered tracts and their resource values. This is the case in Minnesota, and that decision fits in well with the policy for all surface holdings in the East. What remains to be seen is just how willing other Federal and State land managing agencies are to take on that job. In Minnesota, Eastern States Office has found that several Federal and State agencies were willing.

Not surprisingly, it has been necessary to take special steps to protect far-flung eastern public land resources from unauthorized use. The long absence of Federal minerals management capabilities in the East, and the fact that much of the ownership occurs under privately-owned surface and in distant locations, has led to problems of unauthorized removal of Federal minerals. Within the last three years, the office has built both a mineral resource management staff to implement active minerals programs and a resource protection staff to investigate—and often assist in the prosecution of—persons or firms who have removed Federal minerals without authorization.

Modern technology has come into play. It is impossible to check all of the scattered mineral holdings in person or on a regular basis. For this reason the staff is making use of remote sensing imagery. From these computer-enhanced images surface disturbance can be detected. That information is overlaid with mineral ownership data. If it appears

that unauthorized mining has taken place, on-the-ground inspections can then be initiated. The technique is a very promising addition to other resource protection methods.

Another resource at Eastern States Office merits protection. Over five million individual—and irreplaceable—land title records are filed there. They cover the 13 public lands States under Eastern States Office jurisdiction: Alabama, Arkansas, Florida, Illinois, Indiana, Iowa, Louisiana, Michigan, Minnesota, Missouri, Mississippi, Ohio, and Wisconsin.

Cadastral survey notes and plats, government patents and other documents dating back to the original public lands surveys of the late 1700s—each is a small piece of history. But even more important, the records are crucial to tracing and confirming title to land and mineral resources. Each year, in fact, the office supplies about 50,000 copies of various records upon request from the public.

The problem is that many of the records have deteriorated over time and with use. Therefore, a long-term records restoration project is underway. This project is aimed at restoring damaged and faded records, and microfilming and cataloging others to make them readily accessible through microfiche.

Land survey information, much as it was almost 200 years ago, is still being produced or updated. The Eastern States Office has cadastral survey crews working full-time in three national forests—the Mark Twain in Missouri, the Ocala in

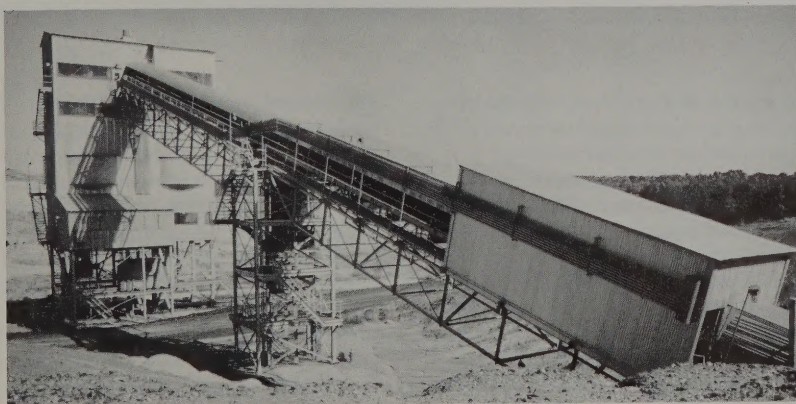
Florida, and the Ozark in Arkansas. Other survey crews move north or south as different projects require and seasons of the year allow. These crews resurvey and remark the boundaries of the public lands, and perform a function which, by law, only the BLM can do—that is to define precisely and legally which lands are the public lands of the United States. This is a responsibility and function of the U.S. Government which pre-dates the Constitution—back to 1785—and is still important today.

The Bureau as a whole has responsibility for the thousands of wild horses and burros that roam the public lands in the far western States. They are the descendants of horses and burros brought west more than a century ago—by miners, homesteaders, the U.S. Army—and now are protected by law.

For their benefit, and to protect the range itself, BLM rounds up excess wild horses and burros and finds good homes for them around the country. The Eastern States Office operates an adoption center in Tennessee, and plans to open another in Pennsylvania this spring. Occasionally temporary facilities are established to bring the animals directly into communities around the East.

One reason wild horses and burros found favor under the law is that they comprise a kind of symbol. They're a reminder of America's past—of the attempts Americans once made to live self-sufficiently in a new land—to discover and make use of the abundant natural wealth to be found there. That effort is really still continuing. We are more aware than Americans once were of the limits on that natural abundance. We are also better equipped to make use of our natural resources, and more convinced of the need to use them properly. BLM is part of that effort, and so is the Eastern States Office.

*An underground coal operation in north-central Alabama, where Federal coal leasing resumed this year.*



*Stephen Altman is a Public Information Specialist in BLM's Eastern States Office, Alexandria, Virginia*

# An Answer for the Adopt-A-Horse Program in The East

By Judith Lent



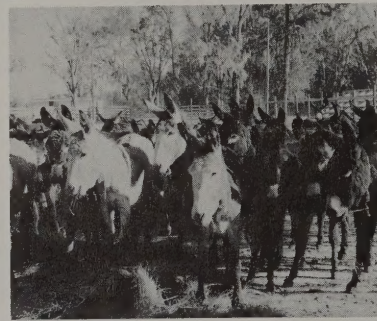
A.

Just outside of Cross Plains, Tennessee, a tiny town 30 miles north of Nashville, is the Bureau of Land Management's first Wild Horse and Burro Distribution Center in the East. It was established in 1979 as a sort of "halfway house" for the wild horses and burros that BLM hauls in every week from western public rangelands. The animals spend only a couple of days at Cross Plains, then they are "adopted" by their new guardians and continue their journey to new homes as far north as Maine and as far south as Florida.

The process is all a part of BLM's national Adopt-a-Horse and Burro Program, originally established under the terms of the Wild and Free-Roaming Horse and Burro Act of 1971 as a partial solution to the problem of over-population among wild horse and burro herds on public rangelands in 10 Western States. There, the animals share the land with native wildlife, as well as sheep and cattle, and sometimes their numbers outstrip the ability of the range to support them. The

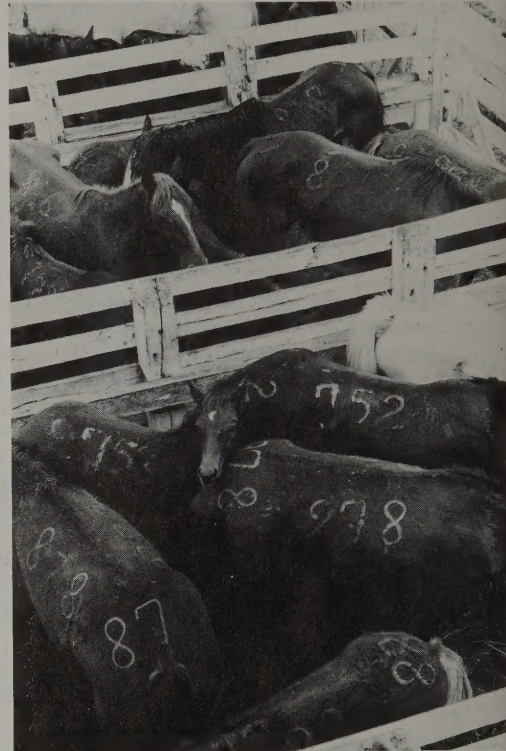


B.



C.

- A. A shaggy burro patiently awaits new owner.
- B. Country singer, Crystal Gayle last year did several television spots for BLM to help make the public aware of the availability of wild horses and burros.
- C. These docile, friendly, once-wild burros make excellent pets and are available through the adoption program.
- D. The animals have temporary numbers on them for easy identification by potential adopters.



D.

most humane approach for maintaining an ecological balance between the animals and their habitat is for BLM to round up the excess wild horses and burros and make them available for adoption by private individuals.

At first, folks were driving to the Far West to get their new pets—to places like Rock Springs, Wyoming; Reno, Nevada; or Burns, Oregon. But as news of the adoption pro-

gram reached new parts of the country, more and more people expressed their interest in adopting the excess animals. As a result, the Tennessee center was established. It's a family operation, run for BLM by Randall Carr and his wife Paula, along with his sister and brother-in-law, Linda and James Buntin. They built the corrals and a visitor facility; and now the center has become a showplace for BLM



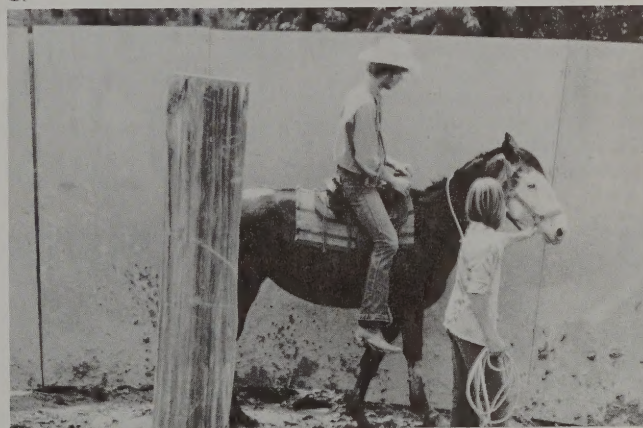
- E. Burros cautiously step from the transportation truck into a holding corral.
- F. From the raised viewing area, potential adopters can view many animals at one time.
- G. Although many of the horses are shaggy from lack of care when they reach adoption centers, with a little effort they can be transformed into beautiful animals.
- H. A once-wild horse grows accustomed to carrying a rider.



G.



H.



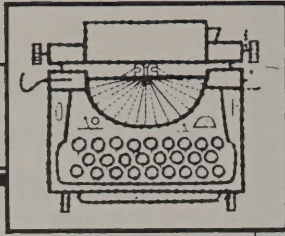
in the East. At an average rate of 40 to 50 animals per week, the Carr's have now adopted nearly 3,000 wild horses and burros through the center. In addition, four special "satellite" temporary centers in areas of high demand have facilitated the placement of 462 more animals in 1981 alone. The centers have been so successful, in fact, that plans are now in the works to open a new wild horse and burro distribution

center in Pennsylvania in the Spring of 1982.

Just as the overall Adopt-a-Horse program is a partial solution to coping with excess wild horses and burros in the West; the eastern distribution operations are a partial solution for assuring that the program works. BLM's goal is to assure that a viable adoption program continues; and easterners, many still learning about the program

for the first time—are continuing to help make it so. For those who would like more information, write: Adopt-a-Horse, Consumer Information Center, Pueblo, Colorado 81009.

*Judith Lent is Chief, Public Affairs  
BLM Eastern States Office, Alexandria, Virginia*



# News Highlights

## Open Space Program Protected

At the request of the City of Phoenix, the Interior Department has moved to protect some 2,537 acres within that city's Mountain Preserve open space area.

The protection is in the form of a Public Land Order, signed in July that withdraws the land from operation of the mining laws. The action will foster the protection of both a rare natural resource and the city's considerable investment by preventing prospecting and location of mining claims.

Surface rights to the land passed from Federal ownership years ago under the Stockraising Homestead Act. Mineral rights, however, remain in Federal ownership, making the withdrawal order necessary to prevent surface disturbances.

The preserve is an undeveloped open space area established in 1972 by the City of Phoenix. The lands are located on or near peaks of the Phoenix mountains. Approximately 1,200 acres are presently used for recreation and open space purposes.

The U.S. Geological Survey has reported that the lands covered by the withdrawal order are without value for minerals covered by the mineral leasing laws.

## Western Communities Seek 600,000 Acres of Federal Land

Communities in 11 western States have indicated they would like an estimated 600,000 acres of Federal lands transferred to them for uses such as education, health and expansion.

These requests are in response to a letter from Secretary of the Interior James Watt, asking communities of the West to identify public lands which could be used to meet State and community needs.

States which have responded, number of community requests and total acreage desired include the following: Arizona(28 community requests), 34,600 acres; Colorado (14 requests), 39,000 acres; Idaho (71), 6,800 acres; Montana(28), 8,500 acres; Nevada(22), 321,000 acres; New Mexico(20), 18,700 acres; Oregon(38), 8,000 acres; South Dakota(7), 1,000 acres; Utah(46), 88,000 acres; Washington(2), 15 acres and Wyoming(59), 45,000 acres.

BLM will coordinate with State Governors in responding to the requests.

BLM State Directors have been working with the States and communities as to how BLM-administered public lands may be transferred under the Recreation and Public Purposes Act and other land laws. For example 40 acres for a waste water treatment facility were sold by BLM to Bend, Oregon for \$2.50 an acre. The Idaho State Office of BLM is working to provide school acreage for the Challis School District. Other Idaho community needs are being met through issuance of temporary use permits. Action on lands for airport expansion is under way with the cooperation of the Federal Aviation Administration for Las Cruces, New Mexico. Half the State of Colorado requests are to be processed under Recreation and Public Purposes Act leases in the next few months.

In some cases, Federal lands identified for transfer are under the administration of agencies other than BLM. Those requests are being referred to the appropriate agency to determine if the community requests can be granted.

## Alaska Gas Pipeline Agreement Signed

The State of Alaska and the Department of the Interior have entered into a cooperative

agreement for managing the lands and resources for 740 miles within the State along the corridor of the planned Alaska Natural Gas Transportation System.

Signing the agreement in August were Interior Secretary James Watt and Alaska's Lieutenant Governor Terry Miller, who jointly described it as an important step in Federal-State "good neighbor" relations.

The privately financed multi-billion-dollar project will pump natural gas from the giant Prudhoe Bay oil and gas field, on Alaska's Arctic Sea coast southward along several routes to be fed into existing pipelines.

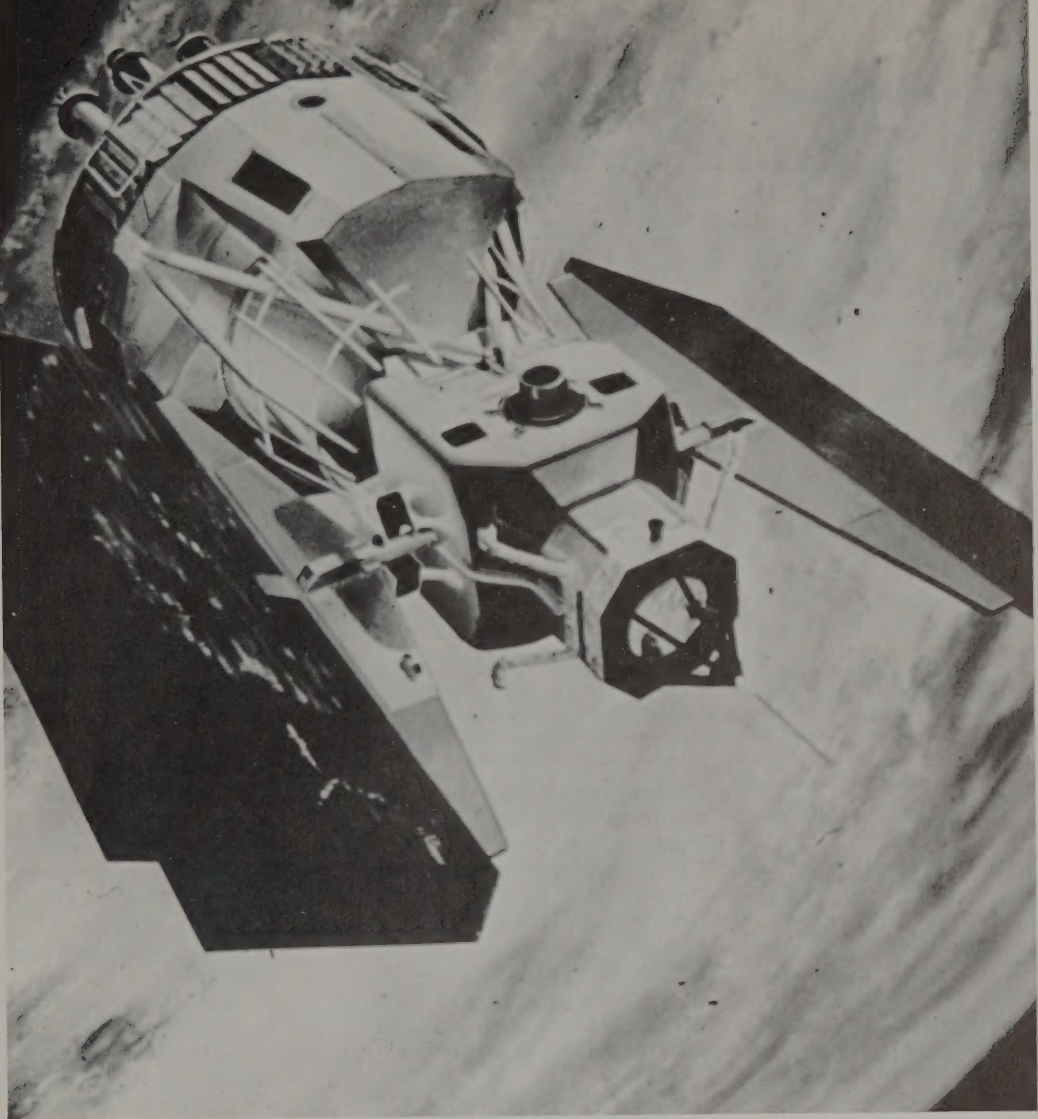
Construction is under way on both the eastern and western legs within the lower 48 States but has not yet begun within Alaska.

The new cooperative agreement establishes a procedure to coordinate the issuance of permits, easements, rights-of-way and other authorizations needed in connection with the project. Some 430 miles of the pipeline within Alaska will cross Federally-owned lands, and slightly more than 330 miles will cross State, Native, and privately-owned lands. The Interior agencies primarily concerned are the Bureau of Land Management and the U.S. Fish and Wildlife Service.

## Oil and Leases to be Offered in Alaska

Tentative selection of 59 parcels of land, totaling approximately 1.5 million acres in the National Petroleum Reserve in Alaska (NPR-A) has been made for offering in an oil and gas lease sale in Dec. This will be the first onshore oil and gas lease offering in the NPR-A. A second offering within NPR-A will be held in the Spring of 1982.





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**al police look r trespassers mineral rights**

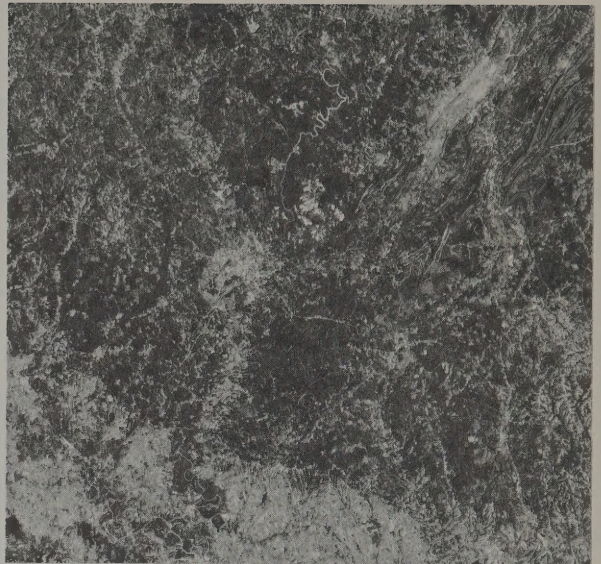
**The Tuscaloosa N**  
 Tuesday, March 27, 1979  
 or West Alabama  
**Coal trespass tour s**

**IN FAYETTE COUNTY TOUR**  
**ongressmen to probe coal field**



# Satellite Monitors Trespass of Federal Minerals

Continued on page 10



*A Landsat image such as this one is used to detect change or surface disturbance. The darker grey is vegetation, black is water. Where there had been surface disturbance, the vegetation pattern would show change on a Landsat image from previous images. When a disturbance is detected, aerial photographs are used to zero in on an area.*

## By Ray Arndt

The Eastern States Office is responsible for the administration of an estimated 24.4 million acres of Federally-owned minerals. There are areas of valuable Federal mineral commodities in at least 20 eastern States stretching from Minnesota to Florida. Significant reserves of oil and gas, coal, phosphate, lead, copper, nickel and other minerals exist as part of the Federal mineral estate in the eastern United States. Federal minerals in the East provide the country with significant amounts of energy and non-energy mineral production and net millions of dollars in royalties for the Federal treasury. Unauthorized removal of these minerals (trespass) has increasingly become a problem.

It was not until 1974, when the Eastern States Office was created, that the Bureau turned its attention to the vast resources of minerals in

the East. Within a few months after the Tuscaloosa Project Office was established in north-central Alabama, trespass of Federal coal was discovered. The area is a rich coal producer. It contains the Warrior Coal Field, an important source of fuel for the Birmingham steel industry since the early 1900s. In 1977 BLM began to give the Alabama coal trespass problem priority attention.

BLM prepared an analysis of the problem and determined needed personnel and funding. The result was the development of a law enforcement staff, a trespass coordinator, and a trespass detection staff at the Eastern States Office. An all-out trespass detection inventory effort was begun. Follow-up field investigation work in the Bureau's north-central Alabama planning office confirmed the existence of 29 cases of surface-mined coal trespass. The estimated tonnage removed was more than 700,000 short tons with a value at the time of mining of \$10 million.

Early in 1979, the theft of Alabama coal exploded into a major issue for BLM. The problem was aired nationwide on a major television program. This coverage was followed with investigations by two Congressional subcommittees and

the Government Accounting Office. One subcommittee hearing was held in Atlanta, Georgia and another in Washington, D.C. After considerable study of the problem, BLM geared up to facilitate the settlement of the Alabama coal trespass cases and to accelerate searching of the rest of the Federal mineral estate for illegal extraction.

The initial goal of the coal lands inventory program was to search the approximately 200,000 acres of Federal coal located under State or private surface ownership. Although the coal lands had high priority, the inventory program was soon expanded to inventory of other valuable minerals such as phosphate in Florida. The program consists of (1) mapping the location of the high potential Federal coal ownership, (2) acquiring aerial photography and searching it for evidence of unauthorized minerals removal and (3) surveying high potential Federal coal ownership in regions of active minerals development through the use of satellite data.

Maps of the Federal mineral ownership are an essential prerequisite to the actual detection work. Because there is such a large mapping workload to be completed in the eastern United States, the inventory staff assisted the mapping effort

by preparing ownership maps for areas of concern not previously mapped. Some 100,000 acres of targeted coal ownership have been mapped as have more than 20,000 acres of Florida phosphate ownership.

Generally, existing aerial photography is purchased rather than having photography flown because of the expense of the latter. The maps are used by inventory specialists to locate the Federal mineral ownership on the photographs. Areas within and adjacent to the boundaries are then searched for possible evidence of surface disturbances related to minerals extraction. This work has been effective in locating sites for field verification. An additional benefit derived from this work is the recording of general surface resource and status information on each aerial photo interpreted. To avoid future minerals trespass problems, such as the one encountered in northcentral Alabama, one requirement was frequent searching of mineral ownership having high potential in regions where mineral extraction operations are present. The requirement of the surveillance system which the Eastern States Office was looking for was one of frequent searching (approximately once a year) using an inexpensive technique. Experience with the conventional aerial photo interpretation inventory program made it apparent the BLM could not afford to purchase the necessary aerial photography on an annual basis. Manual interpretation work would also be too time consuming and costly.

In the BLM testimony at the Congressional subcommittee hearing in Atlanta, Georgia it was stated that the Eastern States Office would consider the use of Landsat imagery. At that time, the staff knew very little about the use of Landsat data except that it covered large areas in a single scene and that it is available for the same areas at frequent intervals.

A remote sensing course for Eastern States Office personnel was contracted and planning for a pilot project was then begun. A two-year pilot study was formalized. The results of the first stage were encouraging and the work is being given operational status this year, one

year ahead of schedule.

Now, what is Landsat digital imagery and how is BLM able to use it to monitor mineral activities? The Landsat, or Land Satellite, became operational with the launching of Landsat I in 1972.

At present Landsat II is fully operational and Landsat III is partially operational. These satellites orbit 570 miles above the earth and record digital data over any given spot on the planet every 18 days. Each frame or scene covers an area 115 miles square and is composed of 7,581,600 picture elements, or pixels, slightly larger than one acre. Although the Landsat sensors provide only a very coarse resolution, they can differentiate 128 shades of grey and can sense the earth's surface in four separate ranges or bands of light. Two of these bands are in the infrared which is invisible to the human eye. The Landsat sensors record and transmit this data at the rate of one scene every 25 seconds. This information is recorded onto computer tapes. Through various photographic simulation processes they are converted into a false color infrared photograph-like image for each scene.

Although these scene images have many uses, the technique which the Eastern States Office is using for its program utilizes the digital data and a specifically designed computer processing system known as IDIMS. The IDIMS is housed in the Denver Service Center Remote Sensing Branch and is used for a variety of BLM resource program projects. The Eastern States' program is one of monitoring or detecting change.

The technique used, very simply, consists of using two or three scenes of the same area taken at different calendar dates and looking for mining (surface) disturbance related change. Because the satellite sensors are highly sensitive to changes in color tone, the difference between the appearance of a fully-vegetated tract of land and one which is stripped of vegetation is striking on Landsat data. Various techniques including albedo difference and band-ratting have been successfully used to detect change. The first step in the process involves registering the data of one Landsat

scene to a second scene in the IDIMS. This results in matching the one acre picture elements from each scene to the same locations on the ground. Once this is done, a change mask, or overlay, is prepared showing where differences in color tones exist from the time of the first scene to the time of the second scene. Small changes in tone can occur for many reasons. These may not indicate any real change and certainly not such a dramatic change as surface mining. The next step is to threshold or, by using an area of known change, eliminate the smaller tone changes not associated with mining from the change overlay. This work is also done on the IDIMS. Smaller changes are subtracted out and, through trial and error, show changes which correspond to those the staff members know to be associated with mining activity.

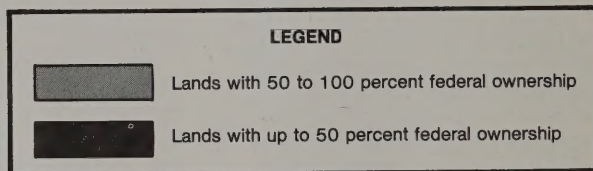
Once the thresholding is complete a change overlay printout can be made. From this, a clear transparency is produced. The transparency is overlaid on the ownership map(s) and areas of significant change on or near Federal minerals are identified.

The next step is to verify the changes and their causes. If recent aerial photography is available, it is cost efficient to make the first check from these. Field verification is the final step for those sites where unauthorized mining appears to be present.

The scenes in the eastern U.S. for which periodic monitoring is desirable will be identified within the next few years. Some areas will be checked and dropped from further consideration in the near future due to lack of potential problems. Other scenes, such as the one covering the Northcentral Alabama Resource Area, will be added to a list of scenes identified for periodic



Principal public lands in our mineral lands account. Alaska is shown at 44 percent of scale of the conterminous 48 states



monitoring. In this way the Landsat associated monitoring workload will be defined. The process is mostly automated with the exception of the mapping and follow-up verification work. Supplemental mapping will continue to be a major requirement for the next few years. Beyond that time the verification workload will continue to be the principal limiting factor on how many scenes can be searched each year.

Using Landsat to monitor mineral lands has Bureauwide applications. The Federal Government owns partial or complete mineral rights on nearly 800 million acres. The bulk of this acreage is located in the

twelve western States, including Alaska. The technique can be used on any of these areas where there is a need to monitor minerals activities and where BLM ground presence is not sufficient to handle it as part of day-to-day activities. Approximately 63 million of these acres, an area equal in size to the State of Wyoming, are located under non-Federal surface (i.e., State or private). In most instances these areas do not have good ground surveillance and should be considered as targets for this technique.

With the help of Landsat, BLM will have the capability to eliminate the problem of Federal minerals trespass.

*Ray Arndt is an Inventory Specialist in BLM's Office of Planning and Environmental Coordination, Washington, D.C.*

# Federal Mineral Ownership in the East -- A "Split" Estate

By Roger L. Hildebeidel

While BLM's Eastern States Office is responsible for relatively little surface acreage in its area of jurisdiction, that area does include some 25 million acres of potentially developable Federal mineral resources. The importance of domestic energy and non-energy minerals is growing. In recent years BLM has begun to recognize the potential value of Federally-owned mineral resources in the East, along with the need for their balanced and effective management.

Federal mineral ownership in the eastern States generally occurs on lands administered by other Federal or State agencies or owned by private individuals. In many cases, Federal mineral ownership—especially on private lands—occurs in small, scattered tracts and in areas where the public is unaware of the

presence of Federal mineral ownership.

## A Clear Picture of a Complex Situation

The nature of the surface overlying Federally-owned minerals will, in part, determine which laws and regulations govern their management. Surface ownership over Federal minerals falls into three basic categories:

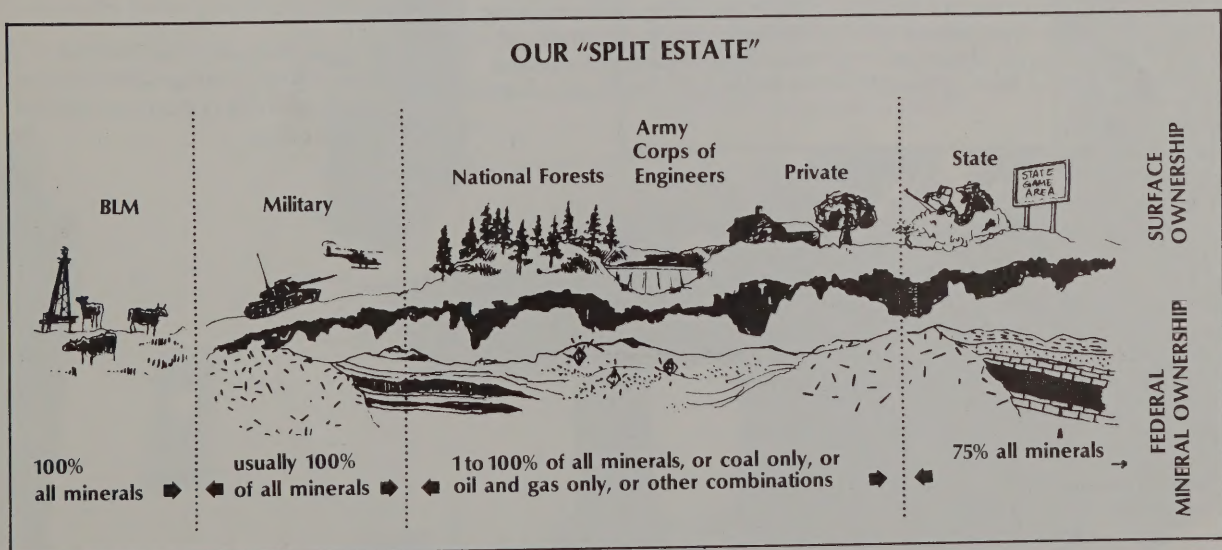
**Public Domain Lands**—lands that were added to the United States during westward expansion and are still owned by the Federal Government. In the East, most of the remaining public domain lands are now part of certain national forests.

**Acquired Lands**—lands acquired by the Federal Government through purchase, condemnation, gift or

exchange, from other public or private ownership—generally for national forests, parks, wildlife refuges, military sites, or other Federal purposes.

**Federal Minerals under Private or State Surface**—lands where all or part of the mineral ownership was reserved to the United States when the surface was transferred to other ownership. These could be in original public domain land patents or in transactions involving transfers of Federally acquired lands. These reserved minerals are managed by BLM according to the provisions of applicable Federal laws. They are separate from the ownership of the surface estate. These are often called "split estate" lands.

The varieties of surface and sub-surface mineral ownership can lead to a multitude of management situations. In a given area, for instance,



the surface of the land may be owned by a private individual, while all or certain types of minerals (such as coal only or a combination of coal, oil and gas) underneath the surface are owned by the Federal Government, and managed by the Bureau of Land Management. Or the surface may be owned by a State government with only the underlying coal reserved to the United States. Or the surface may be owned by the Federal Government and managed by the National Park Service, with the underlying minerals also Federally-owned but closed by law to development. The possible variations are almost infinite.

There are also numerous situations in which the surface may be owned by the Federal Government but the underlying minerals are privately-owned. This has occurred most frequently in the eastern national forests and Corps of Engineers civil work projects when Federal agents purchased only the surface, and title to the minerals was retained by the seller or had already been severed from surface ownership to a third party. The full spectrum of such possibilities is depicted in the accompanying illustration.

Finally, another complication arises in eastern areas on acquired lands. In cases where all minerals were acquired, the minerals are generally characterized as "hard-rock" minerals—such as lead, copper, nickel, gold and silver—which are also subject to leasing by the Federal Government. Unlike many areas in the West, where hardrock minerals are locatable under the General Mining Law of

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### Distribution of Surface Acreage Under Eastern States Jurisdiction

Alabama	2,618
Arkansas	1,860
Florida	2,330
Illinois	33
Louisiana	3,854
Michigan	690
Minnesota	41,974
Mississippi	1,617
Missouri	400
Ohio	120
Wisconsin	337
<b>Total</b>	<b>55,833</b>

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1872, a miner cannot stake a claim for these minerals on any acquired lands; or on eastern public domain lands except in the States of Arkansas, Louisiana, Mississippi and Florida.

BLM responsibilities for minerals leasing in the East run the gamut: for oil and gas, both competitively and noncompetitively, in the Gulf States and on the Eastern Overthrust Belt; coal in Alabama, Kentucky, Virginia, Ohio, Pennsylvania and other States; phosphate in Florida; and hardrock minerals in Minnesota, Missouri and North Carolina. The responsibilities include recording and examining mining claims in Arkansas and reviewing drill plans in Louisiana or Mississippi. The Eastern States

Office also conducts the bi-monthly simultaneous drawings for oil and gas leases—commonly called the Federal oil and gas lottery—for parcels within the 31 eastern States.

Because of the great variety of combinations of mineral ownership patterns—or "split estate"—and because of the special laws governing the lease or disposal of different mineral commodities, the Eastern States Office faces a unique challenge in minerals management within the BLM.

### Federal Mineral Ownership Maps

To portray the many varieties of Federal surface management jurisdictions and Federal mineral reservations in the most usable form, BLM initiated a special mapping program in 1974—the Federal Minerals Management Mapping Program. This program involves the search of thousands of title documents for basic ownership data, as well as verification and cross-checks with numerous local State and Federal agencies. To date, 76 maps have been developed by the Eastern States Office and more are in process.

Information about BLM's Federal mineral ownership maps and Federal minerals leasing programs in the East may be obtained by writing to the Eastern States Office, Bureau of Land Management, 350 South Pickett Street, Alexandria, Virginia 22304.

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*Roger L. Hildebeidel was the BLM Eastern States Director at the time this article was written. He is now the BLM Budget Officer*



## Keeper of Lighthouses

By Richard A. Brooks

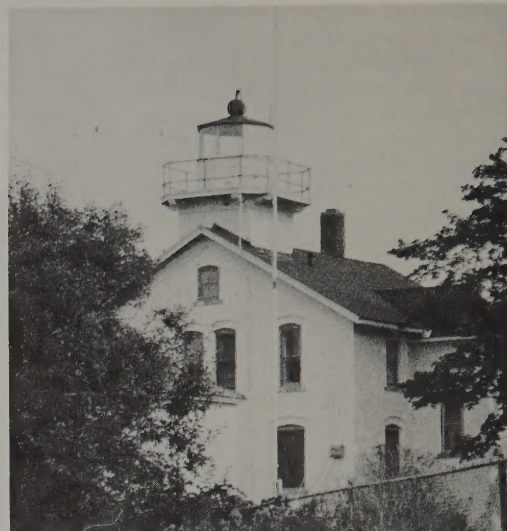
Lighthouses have assumed a romantic image in literature, song, and folklore. In the dark of night the beam from a lighthouse brought reassurance to sailors, and the lighthouse keeper became symbolic of responsibility and tranquility.

These beacons in the night became the responsibility of the Federal Government in 1789 when Congress created the Lighthouse Establishment under the jurisdiction of the Secretary of the Treasury. It remained there until 1903 when it was transferred to the newly created Department of Commerce and Labor. Finally, in 1939, the Lighthouse Service was merged with the U.S. Coast Guard.

The Bureau of Land Management may soon become a lighthouse keeper and assume responsibility for managing and physically protecting some 19th Century lighthouses in the eastern United States. The parcels of land on which they are located were reserved from the public domain for lighthouse purposes and are currently controlled by the U.S. Coast Guard. The Coast Guard no longer needs all of the



*(Preceding page) Presque Isle Lighthouse. (Left) View from the top of the Presque Isle lighthouse. (Right) Grand Traverse Lighthouse*



land on which 18 lighthouses are located.

The majority of these structures date from the mid to late 1800's and are located in lakes Michigan, Superior, and Huron, off the shores of Michigan and Wisconsin, and also in the Gulf of Mexico, off the coastal waters of Florida, Mississippi, and Louisiana.

The development of the lighthouses is associated with early settlements and growth of commerce, particularly in the Great Lakes Region. They were essential to the growth of maritime commerce.

Two lighthouses in Michigan today stand as historic reminders of early efforts to insure the safety of men and ships engaged in commerce in the Great Lakes Region.

Grand Traverse Light Station near Traverse City on Lake Michigan was built in 1858. It is one of the oldest lighthouses on the eastern shore of the Lake.

The Presque Isle Station near Alpena on the coast of Lake Huron dates back to 1870.

The opening of the Erie Canal in 1825 provided towns and communities in the Great Lakes Region with inexpensive transportation to markets in Europe and the East. There was a corresponding boom in shipping as grain, lumber, and coal moved through the lakes and along the canal to eastern markets.

The boom in shipping was followed by a boom in lighthouse

building. But, it was not until 1855 when the opening of the Saint Mary's Fall Ship Canal provided easy access to Lake Superior that shipping in the Great Lakes reached its peak. That canal opening was followed by a second boom in lighthouse building.

Many of the new lighthouses were built on public land, still relatively abundant in the Great Lakes Region during the 1800's. These lands were withdrawn from the public domain and transferred to the agency responsible for the operation of the lighthouses. When that duty was transferred to the Coast Guard, that agency became responsible for both land and structures.

Today, automation of equipment has largely made the role of the lighthouse keeper obsolete. In some cases the light itself is no longer needed to insure the safety of shipping.

As shipping developed in the Great Lakes, lighthouse design changed to meet navigational needs under a variety of circumstances. Coastal lights marked the shoreline and harbor lights helped ships navigate deep water channels into the harbors.

### **Harbor Light Styles**

The Grand Traverse light is typical of those lighthouses designed for harbors. Here the light tower is over the roof of the keeper's house.

It is reached by a spiral staircase leading up from the second floor. At the top there is a glass-enclosed room called the "lantern" which protected the lamp. At Grand Traverse the lamp is approximately 40 feet above ground level.

Over the years, lanterns have varied considerably in design. The "birdcage" lantern was quite common during the early years, but by 1870 polygonal structures with eight to 10 sides were almost universal throughout the Great Lakes region.

At one time or another candles, sperm whale oil, rapeseed oil, lard oil, and kerosene were used as fuel for the lamps. All gave off fumes that had to be vented through a ventilation ball in the roof above the lamp. With the advent of the 20th Century, electricity replaced the various fuels and solved the problem of fumes.

In order to reach ships miles from shore, the light from the lamp had to be concentrated by reflectors and focused through a lens. The kind of lens used became a matter of controversy. In 1812 the Government bought patent rights to the Argand lamp and parabolic reflector system from its originator Winslow Lewis. Ironically, this arrangement proved unfortunate even though the lens was a vast improvement over earlier systems. It delayed by more than 30 years the adoption of the superior Fresnel lens, developed in 1822 by the French physicist Austin Fresnel.



The Fresnel lens was a beehive-shaped apparatus of prisms that revolutionized the lighthouse operation by making it simple to maintain a good light. However, by 1857 most of the lighthouses on the Great Lakes had the new Fresnel lens. Since Grand Traverse was not built until 1858 it had the improved lens from the beginning.

### The Presque Isle Station

The Presque Isle station is typical of lighthouses designed to mark the coast line and is markedly different from the structures at Grand Traverse. The lantern sits atop a 113-foot round tower, 19 feet in diameter at the base tapering to 12 feet at the top. It is surmounted by a round iron watch room and a 10-sided cast iron lantern.

The tower has outer and inner walls separated by a 31-inch air space at the bottom and by a four-inch space at the upper balcony. The tower is connected to the keeper's house by an enclosed passageway.

This light was also fitted with the improved Fresnel lens, and produced a beam that was visible 18 to 19 miles from shore. The original lens is one of over 100 still in use on the Great Lakes. A 1000-watt bulb is the source of light.

### Saving Our Heritage

Today, many of the lighthouses and associated structures are endangered—threatened both by nature and vandals. In the early days structures were often built too near the water. Wave action eroded the surrounding land and sometimes undermined the lighthouse itself. It was not uncommon for light stations built too close to the water to have to be relocated further inland.

In the Great Lakes area the exterior brickwork of some structures is deteriorating because of weathering and the destructive moisture within the walls.

Neglect of frame buildings leads to rapid deterioration. Many must soon be stabilized or they will be lost forever. Empty buildings become targets of vandals and looters.

Once the responsibility for pres-

ervation becomes the duty of BLM, Federal regulations will require the Bureau to determine if the lighthouses and associated buildings are eligible for inclusion in the National Register of Historic Places—a listing of properties having historic or prehistoric value.

One step in this process—the gathering of information on the historic values to qualify properties for inclusion in the Register—has already been completed for Grand Traverse and Presque Isle lighthouses. From the information compiled, the State of Michigan Historic Preservation Officer has determined that they are eligible for the Register.

Listing on the Register does not guarantee preservation. It does, however, insure public visibility and official recognition of the cultural values of the properties and that these values will be carefully considered before any structures are disturbed.

### BLM's Involvement

Present planning calls for the Coast Guard to transfer all land and structures at Grand Traverse to the Bureau. At Presque Isle the story is slightly different. The lighthouse itself is still in use and will remain under Coast Guard jurisdiction. But since the lighting mechanism has been automated, the surrounding 100 acres of land and associated structures are no longer needed. These will be transferred to BLM.

Acquiring jurisdiction does not mean that BLM will necessarily become involved in the management and development of the properties.

The facilities at Grant Traverse, including the lighthouse and 14-acre reserve are now being managed as an interpretative center by the State of Michigan's Department of Natural Resources. BLM would like to transfer the property to the State agency as an addition for adjacent Leelanau State Park. The Bureau's role would be to prepare papers for the transfer and to draw up stipulations requiring the State to maintain the integrity of the historic structures.

At Presque Isle the township manages the property surrounding the lighthouse under terms of a

lease with the Coast Guard. After BLM acquires jurisdiction, the lighthouse keepers' dwellings will probably be transferred to the township along with the land it now leases. The transfers would contain stipulations requiring the township to preserve the historic values of the property.

Only if the State of Michigan or the Presque Isle Township declined to accept responsibility for the properties would the Bureau seek other alternatives. The historic structures would then probably be protected by withdrawals and managed by BLM or another public agency or private institution willing to meet the stipulations to preserve the historic integrity of the sites.

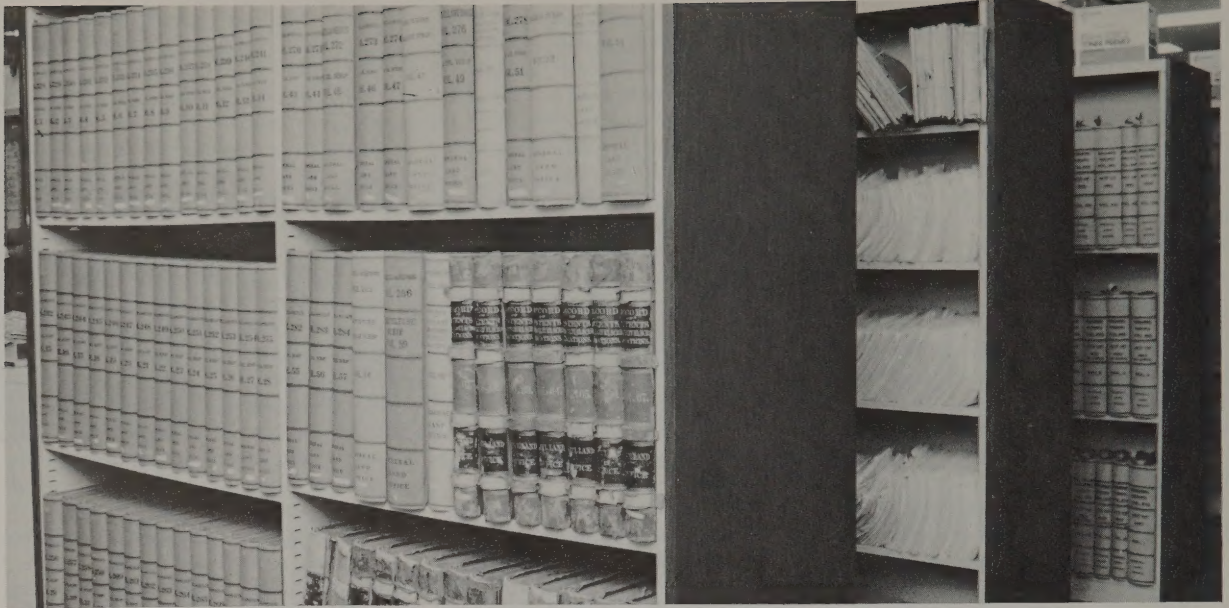
The lighthouses in the Great Lakes Region, as well as those along the coastal areas of the Gulf of Mexico and the Pacific coast, have played an important role in the commercial development of our Nation. Typical examples should be preserved.

The BLM intends to have State and local agencies, and the people they represent, involved in both the decision-making and, where practical, in the daily management and protection of this important segment of our past.

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*Richard A. Brooks is an Archaeologist in BLM's Eastern States Office, Alexandria, Virginia*

*We would like to thank the following individuals who have been extremely helpful with BLM's lighthouse project: Dr. Charles K. Hyde, historian, Wayne State University who was instrumental in the nomination of the lighthouses to the National Register of Historic Places; Noel Johns, Investigator for BLM's Eastern States Office; Donald Jackson, of the Historic American Engineering Record and Mr. Nate Willis, of the U.S. Coast Guard.*



(Above) The Eastern States Office houses 8,978 bound volumes, containing over five million patent documents. (Below) Many old land titles and patents require special storage.

## The Biggest Land Title Office In the World!

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**William J. "Doc" Dorasavage  
and Paul Herndon**

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The history of public lands in the eastern United States can be traced through the Bureau of Land Management's Eastern States Office land records, dating back to the beginning of westward expansion. Since that time, Federal land records have been accumulating; and most of them—field notes, survey plats, patent records, tract books and case files—are being used daily at BLM's eastern field operations headquarters in Alexandria, Virginia.

The Eastern States Office maintains the records of some 7.5 million land transactions, involving over a billion acres of land. Each year, the office—often called the "biggest land title office in the world"—fur-

nishes over 50,000 copies of specific records to private citizens, surveyors, title attorneys, abstract companies, industry representatives, agencies of Federal, State, and local governments, and historical researchers.

To explain how BLM acquired all these records, it's first necessary to go back to the end of the Revolutionary War, when the U.S. Government found itself faced with a huge debt. That's when the Continental Congress passed the Land Ordinance Act of May 20, 1785, authorizing the Treasury Department to survey and sell public domain land as a source of revenue. The public domain is defined as all the land originally acquired by the United States for purposes of National expansion. The Act also established the policy of "survey before settlement"—a policy that continues to this day. After heated debates in Congress about the best methods



of survey to be used, the rectangular system was adopted so that lands could be identified with certainty by a legal description. The survey of the public lands was the first step in the public land disposal system, and the surveyor's field notes became the first written public land records.

**Today**, the BLM Eastern States Office maintains a complete set of field notes and township plats covering thirteen public domain States within its 31-State area of jurisdiction. The field notes are filed by

State in 1,745 bound volumes; and over 30,000 plats are filed by State, township and range.

In 1787, after the first surveys were completed in Ohio, the first public domain lands were sold from a one-room office of the Board of Treasury in the Federal Building located in lower New York City. That office was relocated to Philadelphia in 1790.

As events rushed our young Republic toward the War of 1812 with England, settlers continued to pour into the frontier in search of land with little thought as to how the international complications would affect their future. Ohio lands, ceded by the Indians in the Treaty of Greenville, were soon filled with settlers and fingers of settlement probed north from the Ohio River along river valleys in the Territories of Indiana and later Illinois.

Settlement proceeded at an equal pace south of the Ohio. Between 1800 and 1812 Congress created 18 land districts and the Treasury Department sold over four million acres of public land for settlement.

When the public lands were sold, "patents" were issued. In this case, patents are deeds that transfer land ownership from a sovereign (the United States Government) to a buyer. Patents are the best form of warranty deed, and are often the first record in a chain of title to a piece of property. Therefore, they are extremely important in establishing private ownership of land. Prior to March 2, 1833, all original patents were actually signed by the President of the United States; after that, designated officials signed in his behalf. BLM's Eastern States records include the earliest patent signed by a President. It is dated at Philadelphia, March 4, 1792, signed by President George Washington and countersigned by Secretary of State Thomas Jefferson.

**Today**, the BLM Eastern States Office houses 8,978 bound volumes, containing over five million patent documents. Some patents issued before 1908 are filed by State and name of the land office where the certificate originated. Others are filed according to the act of Congress under which they were issued, regardless of geographical location.

Since 1908, all patents have been assigned consecutive serial numbers and filed numerically.

Congress had set its land disposal policies when it adopted the Ordinance of 1785. The deficiencies of that policy, including the requirement that all public lands be paid for in cash, brought wide spread demands for a reform of public land laws. Congress responded, and on May 10, 1800, President John Adams signed a new public land law meeting most of the demands of the settlers.

The new Act provided for credit sales of public land, reduced the minimum size of individual tracts that could be sold to 320 acres, and set a \$2 per acre minimum price for public lands. It retained the provision that all public lands be sold at public auction.

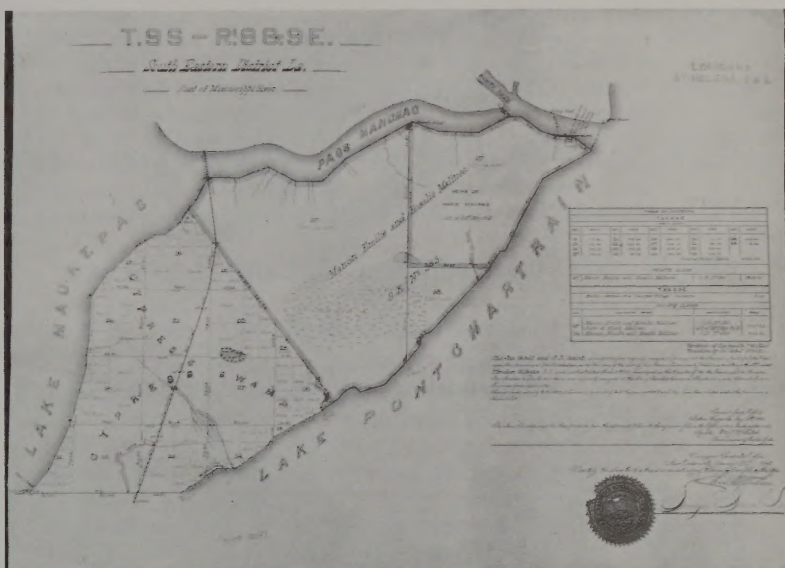
Under the credit system, a person buying a tract of public land had to

the fifth year was forfeited and resold at auction.

With that solid accomplishment, Adams soon relinquished his office to the newly elected Thomas Jefferson. Jefferson appointed Albert Gallatin to be his Secretary of the Treasury. Gallatin was to be responsible for the administration of the public lands for the next twelve years. (Through the first term of James Madison.)

Gallatin was a resident of western Pennsylvania and understood the problems of the frontier. He believed that public lands should be sold in small tracts to the individual settler, and had a keen interest in the public domain.

During his tenure, the sale of public land, spurred by credit sales, was greatly expanded. The credit system, a blessing to the settler, was a bane to the accountants. Gallatin insisted on absolute accuracy and



A cadastral survey plat, Louisiana, 1882

pay one-twentieth of the agreed price at the time of the sale and one-fourth 40 days later. A second quarter was due at the end of the second year and the rest during the third and fourth years. The Government charged six percent interest on the unpaid balance, but offered an eight percent discount for payments made before the due date. Land not fully paid for at the end of

also instructed his receivers that they must accept any payment offered by a settler on his account, no matter how small. The calculations involved in figuring interest and discounts on a payment of a few dollars complicated the work for all.

Many things combined to increase the work load. From 1800 to 1812 Congress created 14 new land dis-

## A "Time Line" for the Eastern State Office's Federal Land Records

- 1785 Land Ordinance Act
- 1787 New York City
- 1790 Philadelphia
- 1800 Washington, D.C.
- 1812 General Land Office created (GLO)
- 1814 GLO burned!
- 1833 GLO burned again!
- 1839 Treasury Building
- 1849 GLO transferred to Interior
- 1855 Patent Office Building
- 1900 GLO Building
- 1917 General Services Administration (old Interior) Building
- 1937 New Interior Building
- 1946 GLO renamed Bureau of Land Management
- 1954 Eastern States Office (ESO), part of Washington Office (WO)
- 1961 WO Division of Field Services (Merger of ESO and WO Branch of Field Services)
- 1964 Eastern States Office again!
- 1966 Silver Spring, Maryland
- 1967 Eastern States Land Office
- 1973 Eastern States Office again!
- 1979 Alexandria, Virginia
- 1985

tricts in addition to those established in 1800. For each new district a land office had to be set up and two new officials appointed to run the district.

Many were the causes for delay in getting ready for a land sale. One was the requirement that all public land be surveyed before it was sold. The survey might be delayed because of Indian trouble, the absence of a supervisor, or by the mania of some surveyors for pin-point accuracy. Surveyors never had enough clerical help. The new administration practiced frugality as a matter of principle, but the practice was frequently carried to the point of parsimony.

With an ever-increasing workload, the Treasury Department office moved from Philadelphia to the new Federal city of Washington in 1800. There, six clerks kept land records and issued patents from a two-story wooden building on 15th Street, near Pennsylvania Avenue.

The tract book system of recording land transactions was established about that time. The tract books began simply as listings of all the transactions involving surveyed public lands—by State or territory, meridian, township, range, section and subdivision. The number of

entries increased rapidly as land offices from throughout the country forwarded certificates to the headquarters office, where official patents were issued. Now, the tract books are used as the basic index for public land title research in the eastern States.

**Today**, there are 1,582 original General Land Office tract books at the Eastern States Office, showing how, when, and to whom title to public domain lands passed from the United States—in the States of Alabama, Arkansas, Florida, Illinois, Indiana, Iowa, Louisiana, Michigan, Minnesota, Missouri, Mississippi, Ohio and Wisconsin. An additional 2,325 tract books covering the western public domain States are also filed at the office on microfilm. For day-to-day management, the western BLM State Offices use the Master Title Plat system instead of tract books.

As the number of sales increased, Gallatin found himself more and more embroiled in the details of public land administration. As a result, other duties were neglected. As the Nation headed toward the Revolution it was obvious that his time was needed for more import-

ant matters. At last Congress heeded his plea for relief.

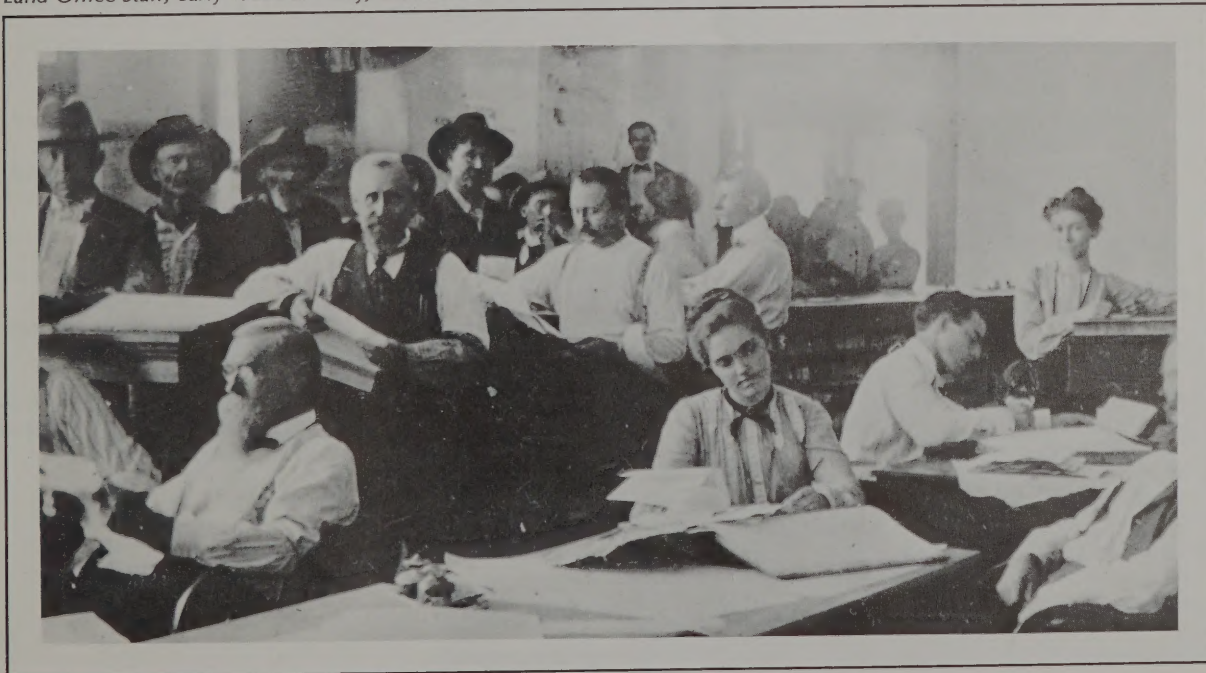
On April 25, 1812, by an Act of Congress, the General Land Office was created within the Treasury Department. It was the first bureau to be created within a department.

In creating the General Land Office, Congress combined the functions that had previously been scattered among three Federal departments—Treasury, War, and State. The Secretary of the Treasury had directed the survey and sale of public lands. Treasury also maintained records and accounts. The Secretary of War administered military bounties and bounty lands. Patents were issued by the Secretary of State.

Two years after its creation, the General Land Office was destroyed by British troops invading Washington. It took two years to rebuild a similar structure at the same site. Fire again destroyed the two-story wooden building in 1833, but all records were rescued and carried to the safety of nearby private homes. For six years, the General Land Office occupied a row of five private houses on the south side of Pennsylvania Avenue, between 14th and 15th Streets.

During the same period, a total

*Land Office Staff, early 1900's at Perry, Oklahoma.*





Early Government Land Office surveying team on the job.

of 179 local land offices were eventually established within the thirteen eastern public domain States, all generating more and more record files.

In 1839, the headquarters moved into the new Treasury building at 15th and Pennsylvania, where there was enough space for the increasing volume of files—and it was fire-proof!

The General Land Office was transferred to the newly-created Interior Department in 1849, and, after three more relocations, the records were moved to the present-day Interior building in 1937. In 1946, after a major reorganization, the General Land Office became a part of the new Bureau of Land Management within the Interior Department.

After 1950, reorganization—and more moves for the public land records—became commonplace. In 1954, the Bureau abolished regional offices in favor of State offices; and old Region VI became the Eastern States Office. Eastern States Office later merged with the Washington Office Branch of Field Services and became a Division of Field Services within the BLM headquarters. In 1964, another Bureau reorganiza-

tion changed the Division back to the Eastern States Office, which in the process inherited the remaining General Land Office non-decentralized lands activities formerly retained in the BLM Director's Office.

In still another reorganization in 1967, the Eastern States Land Office, by then located at Silver Spring, Maryland, was created. Finally, in 1973, the Eastern States Land Office again became the Eastern States Office. Since 1979, the office has been headquartered at Alexandria, Virginia, where all the records are protected in fireproof, temperature- and humidity-controlled areas. Eastern States' functions have grown, too—from those limited to a land office to those of a more widely-based multiple-use resource management office.

Due to the age and wear from frequent use, the records are slowly and continuously losing their readability. Since they are the original records and there are no duplicate sets, the documents must be preserved before further deterioration renders them unfit for use. Accordingly, a Records Improvement Project was initiated at the Eastern States Office in 1978. The project is

expected to take 10 years or more to complete, while documents are restored, microfilmed and indexed. The records will also be merged into an automated information system.

After it's all done, then—and only then—can the old original documents—the first records of America's national expansion—be retired to their rightful resting place, the National Archives of the United States—in Washington, D.C.—not too far from 15th Street, near Pennsylvania Avenue, where their first Washington, D.C. home was!

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*"Doc" Dorasavage is Chief, Branch of Lands and Title Adjudication, BLM Eastern States Office, Alexandria, Virginia*

*Paul Herndon is a Public Information Specialist in BLM's Washington, D.C. Office of Public Affairs*



*Citizens line up to register for Rosebud land offering in Grègory County, South Dakota, 1904. The General Land Office here is located in Yanton, South Dakota.*

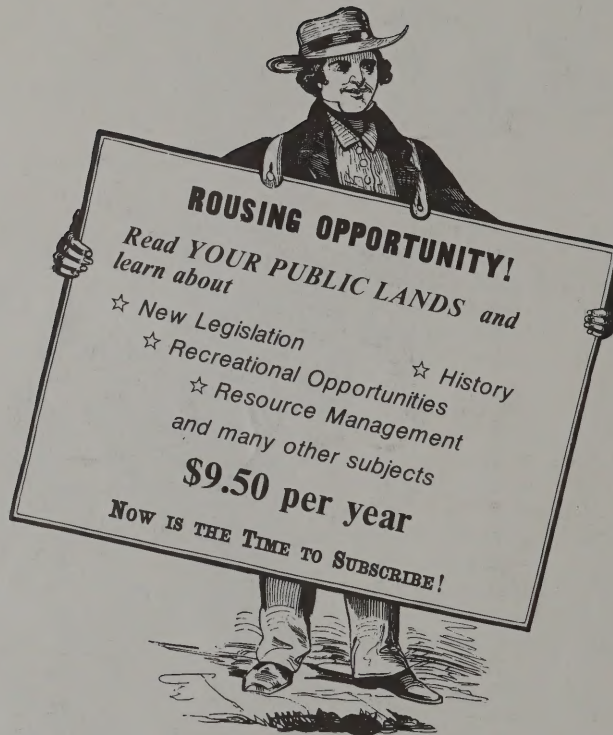
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